

### **REMARKS**

Reconsideration and allowance of this application, as amended, is respectfully requested.

This Amendment is in response to the Office Action dated May 31, 2007. By the present Amendment, new dependent claims 6-10 have been added to further define features of the present invention, as will be discussed below. The independent claims 1-5 have each been amended to clarify antecedent basis for the new dependent claims 6-10.

Reconsideration and removal of the rejection of claims 1-5 under 35 USC §103(a) as being obvious over Nguyen (USP 5,732,236) is respectfully requested. With regard to this, the attached **Appendix** provides a Sketch for illustrating features of the present invention in comparison with features of conventional memory controllers and the claimed memory controller of the parent application.

More specifically, in a conventional memory controller operation, an Access Request 1 is made which causes the memory controller to activate (ACT) a first page to be accessed and then execute an access (Read) of the activated first page. Subsequently, after an Access Request 2 for a second page, a precharge (Pre1) is carried out for the accessed second page. In other words, the operation follows the following sequence:

... Req.1 -> Act -> Read -> Req.2 -> Prel -> Act1 -> Read1

In the parent application Serial No. 09/962,257, the claims are directed to features disclosed in the present application in which, based upon an Access Request 1, the memory controller activates (Act) a first page to be accessed and then precharges (Pre2) a second page, which is to be subsequently accessed, prior to the execution of the access (Read) to the originally activated first page. Thus, the

claims of the parent application follow the sequence:

... Req.1 -> Act -> Pre2 -> Read -> Prel -> Act2 -> Read2

Finally, the present application claims an alternative precharging arrangement to that claimed in the parent application. Specifically, as shown in the Appendix, based upon an Access Request 1, the claimed memory controller defined in claims 1-5 activates (Act) a first page to be accessed, and then precharges (Pre3) a second page to be subsequently accessed prior to the Access Request 2 for the subsequently accessed second page. As also shown in the attached Sketch (and defined in the new dependent claims 6-10), the precharge of the subsequently accessed page (Pre3) can take place, in accordance with the present invention, between the Read of the first accessed page and the Access Request for the second page. In other words, in accordance with the present invention, the following sequence is carried out:

... Req.1 -> Act -> Read -> Pre3 -> Act3 -> Read3

Each of the independent claims 1-5 defines the above-noted operation for the present invention. Taking claim 1 as an example, the claim clearly states:

"memory control means for activating a first page to be accessed, based on said access request from said processor, and executing, before a next request for access to a second page to be accessed subsequently by said processor, precharge of said second page to be accessed subsequently,"

In other words, as discussed above, the present claims clearly define that the precharge of a second page is carried out before a next request for access to the second page. It is respectfully submitted that the cited reference to Nguyen fails to teach or suggest this feature.

In the Office Action, the last paragraph on page 4 attempts to meet such limitations in the independent claims by referring to column 4, lines 5-13 and column 8, lines 3-11 of the primary reference to Nguyen (in addition to referring to Fig. 3b).

Although the teachings in these portions of Nguyen are of general interest, it is respectfully submitted that these cited portions of Nguyen actually do not teach the claimed feature of precharging a second page before the request for access to the page is made. For example, a careful reading of column 4, lines 5-19 shows the feature of:

“In this manner, DRAM controller 18 reduces the time required to access a memory location in system memory 11 by precharging the appropriate RASn control line for a next requesting circuit while still performing a memory access for a first requesting circuit.”

Although this suggests precharging a control line while an earlier memory access is being carried out, it does not teach or suggest the specific feature of the present claims of precharging a second page before a request for access to the second page is even made. Therefore, reconsideration and allowance of the independent claims 1-5 is earnestly solicited.

Reconsideration and allowance of the new dependent claims 6-10 is also respectfully requested. These claims define a feature shown, for example, in the Appendix, that the precharge of the second page (e.g., Pre3) is made during the interval between the Read operation of the first page and the Access Request of the second page. With regard to this, it is respectfully submitted that nothing in the Nguyen reference teaches or suggests this particular timing for the precharge of the second page to be subsequently accessed. Therefore, particular consideration and allowance of these dependent claims 6-10 is also respectfully requested.

If the Examiner determines that there are any matters which can be resolved by way of either a personal or telephone interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

Applicants request any shortage or excess in fees in connection with the filing of this paper, including extension of time fees, and for which no other form of payment is offered, be charged or credited to Deposit Account No. 01-2135 (Case: 500.40687CX1).

Respectfully submitted,  
**ANTONELLI, TERRY, STOUT & KRAUS, LLP.**

/Gregory E. Montone  
Gregory E. Montone  
Registration No. 28,141

GEM/dks  
1300 N. Seventeenth Street  
Suite 1800  
Arlington, Virginia 22209  
Tel: 703-312-6600  
Fax: 703-312-6666

# Appendix

# Appendix

